

diagrams and examples of the application of locus diagrams. The book is amply illustrated by more than a hundred diagrams. Everything is concise and to the point, and the student who works through its pages will find himself equipped with a valuable weapon of research.

THE RECONSTRUCTIONAL ANATOMY OF THE KIDNEY.

Untersuchungen über Bau und Entwicklung der Niere. Edited by Prof. Karl Peter. Erstes Heft. Inhalt I., Karl Peter, Die Nierenkanälchen des Menschen und einiger Säugetiere. II., Michio Inouye, Die Nierenkänelchen des Rindes und des Tümmlers. Pp. viii+447. (Jena: Gustav Fischer, 1909.) Price 30 marks.

THE editor of this monograph holds with Koelliker that a knowledge of the morphological characteristics of the renal tubules is an important groundwork for the study of the physiology and diseases of the kidney. This ground plan he has laid down in a bulky volume, profusely illustrated by numerous and well-executed drawings. By means of maceration with concentrated hydrochloric acid and subsequent isolation of the urinary tubules, as well as by reconstruction models and serial microscopic sections, he has studied, along with his pupil, Michio Inouye, the structure of the kidney in various mammalian families in great detail. For the benefit of those who desire to ascertain his results without reading the whole of the text, he condenses a summary of his work into seventy-five pages of this volume.

Prof. Peter has worked out the structure of the kidney of the mouse, rabbit, sheep, cat, man, and pig, while Inouye has studied the organ in the seal and ox. They have given a minute description, perhaps too minute, of the organ in the various animals without adding, to any great extent, to our knowledge of the subject.

As a result of his study, Prof. Peter divides the medulla of the kidney into an inner and an outer zone, and the latter into an inner and an outer area. The cortex he divides into a *pars convoluta* and a *pars radiata*. These, to some extent, can be recognised with the unaided eye or by means of a lens, and each is composed of certain definite parts of the tubules, each zone or area being composed of the same parts in the same species. In fact, with some slight exceptions they are composed of the same parts throughout the whole of the mammalia. A summary of the zones and their contents is given.

These researches of Prof. Peter—minute and accurate as they are—have particularly little in them that will interest those who seek to elucidate the functions and diseases of the kidneys. The author himself states that as regards the significance of the Malpighian bodies his investigations have produced nothing new. Concerning the first convoluted and zigzag tubules which he includes under the name of the “Hauptstück,” certain observations have been recorded with regard to variations in the amount of fat contained in the cells, and from the fact that these vary in their affinity for eosin in different parts of

the convoluted tubule, the deduction is made that the functions of the latter are not the same throughout its length. The facts adduced by these investigations have very little bearing on the two rival theories of the manner in which the kidney removes the urine from the blood—whether by a process of secretion or one of filtration.

The function of the narrow, clear part of the loop of Henle is concluded to be the resorption of the water which has been thrown out of the glomerulus. This is deduced from a ratio which Prof. Peter has found to exist between the relative length of this part of the tubule and the specific gravity of the urine in various mammalia with the exception of some of the smaller ruminants. In this matter his observations support the experiments of Ribbert and H. Marger, and of Hausmann. These experimenters removed the whole of one kidney and the medulla of the second in a rabbit, with the result that the urine was doubled or trebled in amount. As the narrow, clear part of the loop of Henle is contained in the medulla, it is inferred that the increase in the amount of urine is due to the removal of the resorbing part of the tubule. So many factors have to be considered in a case like this that the author's deductions must be regarded with a certain amount of reserve. While one must admire the industry and accuracy manifested by this work, it must also be admitted that even those specially interested will find it very tedious reading, and it is to be hoped that it may be possible to confine the other promised volumes within a more modest compass.

R. D. K.

GREEKS AND HITTITES.

Ionia and the East. Six Lectures delivered before the University of London by D. G. Hogarth. Pp. 117. (Oxford: Clarendon Press, 1909.) Price 3s. 6d. net.

THE author of this book aims at solving the interesting problem of the origin of Hellenic civilisation in the Grecian colony of Ionia, in western Asia Minor. He utilises, in a masterly manner, the results of the extensive archaeological researches that have been carried out within the last thirty years in south-eastern Europe. The excavations of Schlieemann, Evans, and numerous other workers in this field have completely revolutionised our ideas about the origin of that early Grecian culture to which modern European civilisation owes so much.

Mr. Hogarth's conclusions are, that in Attica the home country of the Ionians, the population, before the migration to Asia Minor, was mainly Aegean, but mixed with a northern element of invaders from the Danubian area. At this date there survived in Attica a vigorous bloom of Aegean culture affected to an unusual degree by some eastern influence, so that the colonists who settled on the west coast of Asia Minor in the early centuries of the first millennium B.C. were by no means barbarians. In Ionia the Greek settlers came in contact with a highly developed Asiatic civilisation—namely, that of the Hittites—and one of the most original features of Mr. Hogarth's book is the demonstration which he gives of the powerful influence of the Hittite civilisation in the develop-

ment of the Hellenic culture in Ionia. The Hittites were predominant in Asia Minor from 2000 B.C. to 800 B.C., and, besides being possessed of a highly developed culture of their own, acted as intermediaries for the transmission of Mesopotamian culture to the Greeks. Of both these influences there is distinct evidence in the few excavations that have been carried out in Asiatic Greece.

There appears to be a rich field awaiting the archaeological excavator both in Ionia and in other parts of Asia Minor. In Lydia, which was apparently a Hittite satrapy, very little excavation has been done, and in the Hittite country on the upper Euphrates hundreds of buried cities are known to exist, in some of which, it is almost certain, as Mr. Hogarth points out, bilingual inscriptions connecting the Hittite script with the Assyrian will be found. We may, then, expect discoveries equalling, if not excelling, in importance those that have recently been made in Mesopotamia, in Egypt, and in Crete.

Another iconoclastic view of Mr. Hogarth's is that the Phoenicians played an insignificant part in the development of Greek civilisation. He reduces "the part played by the Phoenicians among the Greek Isles and coasts to that of mere huckstering traders who followed seaways long ago opened by others."

Mr. Hogarth considers that the Hittites were not a maritime people, but were confined strictly to their continent by the Aegean command of the sea. In view of the migration from Lydia to Umbria related by Herodotus, and of the existing population of broad-headed races in the Balkans, which, judging from its present distribution, must apparently have landed on the eastern shores of the Adriatic, Mr. Hogarth's views on the non-maritime character of the Hittites will, we venture to think, be considerably modified by future discoveries. The one weak point in Mr. Hogarth's admirable little book is his disregard of the evidence of physical anthropology. No explanation of the ethnological evolution of the East will be satisfactory which fails to account for the transition of the primitive dolichocephalic peoples of the Balkan peninsula into the strongly brachycephalic population of the present day, and in this respect Mr. Hogarth's otherwise admirable work completely fails. J. G.

SOME NEW CHEMICAL BOOKS.

- (1) *Naturgeschichte einer Kerze von Michael Faraday.*
Herausgegeben von Dr. R. Meyer. Pp. viii + 172.
(Leipzig: Quelle und Meyer, 1909.) Price 2.50
marks.
- (2) *Junior Chemistry.* By R. H. Adie. Pp. viii + 266. (Cambridge: University Tutorial Press, 1909.) Price 2s. *ed.*
- (3) *Chemistry.* By Prof. W. A. Tilden, F.R.S.
Dent's Scientific Primers. Pp. ix + 108. (London:
J. M. Dent and Co., n.d.) Price 1s. net.
- (1) FARADAY'S six lectures on the chemical history
of a candle were, it may be remembered,
delivered to a juvenile audience at the Royal Institution
during the Christmas holidays of 1860-1, nearly
half a century ago.

In reading them we are impressed not merely by the

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delightful simplicity and freshness of their style, and by the variety and ingenuity of the experimental illustrations, but more especially with the completeness of the story he had to tell. There is little that has been modified or extended in this branch of knowledge during these fifty years; there is scarcely a single sentence which might not be uttered without comment or correction to a similar audience to-day.

It is not surprising, therefore, that a fresh edition of Dr. Meyer's excellent German translation should be in demand among young people in Germany, and it speaks well for their appreciation of Faraday and his charming "chemical history" that the translation has reached its fifth edition.

The book is attractively bound, and contains a very pleasing portrait of the author, together with a short biography.

(2) Mr. Adie justifies the production of another elementary chemistry on the ground that the average first-year student shows a lack of intelligent understanding of chemical aims and methods, for which, we infer, the other books are mainly responsible. We are inclined to think that this want of intelligent understanding is due neither to the character of a particular book, nor altogether to the teacher, but to the kind of chemistry done in schools and fostered by the scholarship system of the older universities.

If the systematic study of chemistry at the university or college were founded on a good general knowledge of mechanics and physics, and an elementary notion of those chemical processes applicable to everyday phenomena, the path of the college professor or lecturer would be made much smoother. But schools are not content with this modest programme, and insist upon a standard of knowledge beyond the grasp of the average schoolboy. The result is that the college teacher has to build upon a muddy foundation of confused ideas, which are so familiar to examiners and so difficult to eradicate later. What commends Mr. Adie's new book is not so much the disastrous effects of its predecessors as the long teaching experience of the author. The results of fifteen years' experience of a thoughtful teacher are always valuable, and, as one might have anticipated, the book offers a thoroughly sound course of practical instruction.

The arrangement of the exercises is clear and logical, the examples are thoroughly typical, well selected, well illustrated, and carefully described. Many of the experiments, without being exactly new, are modified and arranged in a convenient form, and the quantitative examples, which are numerous and varied, furnish a sound basis for that most difficult part of chemistry, the understanding of quantitative laws and the theories drawn from them. In reference to the quantitative part, it would be interesting to know what sort of errors the author obtained in determining such things as the gravimetric composition of water, the weight of steam, and the analysis of the oxides of nitrogen, of which no actual examples are given. If the two oxides of nitrogen give anything like correct results by the method described, that much-quoted example of multiple proportion would lose something of its elusive character.